

REMARKS

Claims 1-17, 26 and 28-37 are all the claims presently pending in the application. The previously pending claims have not been amended to more particularly define the claimed invention. New claims 35-37 have been added to claim additional features of the invention and to provide varied protection for the claimed invention.

Claims 1-10 and 28-34 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Tuttle et al. (U.S. Patent No. 6,918,965; hereinafter “Tuttle”) in view of Anthony (U.S. Patent No. 7,056,749). Claims 3-6 and 9 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Tuttle in view of Anthony and further in view of Sakaguchi et al. (U.S. Patent No. 6,613,678; hereinafter “Sakaguchi”). Claims 11-17 and 26 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Tuttle in view of Anthony and further in view of Dvorsky (U.S. Patent No. 6,759,297).

These rejections are respectfully traversed in the following discussion.

I. THE CLAIMED INVENTION

The claimed invention of exemplary claim 1 provides a method of thermally treating a magnetic layer of a wafer including applying at least one local magnetic field to the magnetic layer (e.g., see Application at page 7, lines 15-21). This combination of features allows for a fast and local annealing of magnetic stacks (see Application at page 3, lines 20-21). Additionally, magnetic stacks using an exchange-biasing antiferromagnet such as PtMn can be reliably and efficiently annealed in a magnetic field after deposition, in order to align the pinning of the magnetic reference layer (see Application at page 4, lines 15-18).

II. THE PRIOR ART REFERENCES

A. The Tuttle and Anthony References

The Examiner alleges that Tuttle would have been combined with Anthony to teach the claimed invention of claims 1-10 and 28-34. Applicants submit, however, that, even if combined, the alleged combination of references would not teach or suggest each and every feature of the claimed invention.

That is, neither Tuttle nor Anthony, nor any combination thereof, teaches or suggests “*applying at least one local magnetic field to said magnetic layer*”, as recited in exemplary claim 1, and similarly recited in claims 11 and 18.

The Examiner does not even allege that Tuttle teaches or suggests this feature of the claimed invention. Indeed, the Examiner attempts to rely on Anthony to teach this feature of the claimed invention in order to make up the deficiencies of Tuttle. The Examiner, however, is clearly incorrect.

That is, nowhere does Anthony teach or suggest a method of thermally treating a magnetic layer of a wafer including applying at least one local magnetic field to the magnetic layer. Indeed, the Examiner does not even allege that Anthony teaches or suggests this feature.

Anthony teaches applying the magnetic field to the entire wafer. Indeed, Anthony discloses “[t]his is typically done by annealing the **entire** memory chip or memory wafer (including the AFM layers and the reference layers) at high temperature while exposing the chip or wafer to a magnetic field” (see Anthony at column 5, lines 3-6; emphasis added by Applicants).

Anthony discloses annealing a full wafer or a chip cut out of a wafer. There is no discussion of annealing only part of a wafer, or of an individual chip still on the wafer. Additionally, it is also clear that Anthony, in describing the state-of-the-art, refers to a magnetic field and not to different fields on different locations of the wafers, as recited in exemplary dependent claim 10 of the present application.

Moreover, the Examiner even concedes that “Anthony describes annealing an entire memory chip or wafer while exposing the chip or wafer to a magnetic field” (see Office Action dated September 26, 2006 at page 3).

In stark contrast, the claimed invention recites applying at least one local magnetic field to the magnetic layer. That is, the magnetic field is **confined to a specific localized region on the wafer so that the magnetic field can be varied in orientation and strength from one region to another on the wafer**. The magnetic field of the claimed invention is not applied to the entire wafer, as taught by Tuttle and Anthony.

The localized application of the magnetic field taught in the present Application is much easier to control than the method taught by Anthony (or Tuttle). Additionally, the method of the claimed invention allows a user to set different regions of the wafer at different orientations, which is an advantage to embedded applications of MRAM.

Therefore, Applicants respectfully submit that, even if combined, the alleged combination of references would not teach or suggest each and every feature of the claimed invention. Therefore, the Examiner is respectfully requested to reconsider and withdraw this rejection.

B. The Sakaguchi Reference

The Examiner alleges that Tuttle and Anthony would have been combined with Sakaguchi to teach the claimed invention of claims 3-6 and 9. Applicants respectfully submit, however, that even if combined, the alleged combination of references would not teach or suggest each and every feature of the claimed invention.

That is, neither Tuttle nor Anthony nor Sakaguchi, nor any combination thereof, teaches or suggests “*applying at least one local magnetic field to said magnetic layer*”, as recited in exemplary claim 1, and similarly recited in claims 11 and 18.

Indeed, as detailed in section A, the alleged combination of Tuttle and Anthony fails to teach or suggest this feature. Furthermore, Applicants submit that Sakaguchi fails to make up the deficiencies of Tuttle and Anthony.

That is, nowhere does Sakaguchi teach or suggest a method of thermally treating a magnetic layer of a wafer including applying at least one local magnetic field to the magnetic layer. Indeed, the Examiner does not even allege that Sakaguchi teaches or suggests this feature.

Thus, Sakaguchi clearly fails to make up the deficiencies of Tuttle and Anthony.

Therefore, Applicants respectfully submit that these references, even if combined, would not teach or suggest each and every feature of the claimed invention. Therefore, the Examiner is respectfully requested to reconsider and withdraw this rejection.

C. The Dvorsky Reference

The Examiner alleges that Tuttle and Anthony would have been combined with

Dvorsky to teach the claimed invention of claims 11-17 and 26. Applicants respectfully submit, however, that even if combined, the alleged combination of references would not teach or suggest each and every feature of the claimed invention.

That is, neither Tuttle nor Anthony, nor Dvorsky, nor any combination thereof, teaches or suggests “*applying at least one local magnetic field to said magnetic layer*”, as recited in exemplary claim 1, and similarly recited in claims 11 and 18.

Indeed, as detailed in section A, the alleged combination of Tuttle and Anthony fails to teach or suggest this feature. Furthermore, Applicants submit that Dvorsky fails to make up the deficiencies of Tuttle and Anthony.

That is, nowhere does Dvorsky teach or suggest a method of thermally treating a magnetic layer of a wafer including applying at least one local magnetic field to the magnetic layer. Indeed, the Examiner does not even allege that Dvorsky teaches or suggests this feature.

Thus, Dvorsky clearly fails to make up the deficiencies of Tuttle and Anthony.

Therefore, Applicants respectfully submit that these references, even if combined, would not teach or suggest each and every feature of the claimed invention. Therefore, the Examiner is respectfully requested to reconsider and withdraw this rejection.

III. NEW CLAIMS

New claims 35-37 have been added to claim additional features of the invention and to provide more varied protection for the claimed invention. These claims are independently patentable because of the novel and non-obvious features recited therein.

Applicants submit that new claims 35-37 are patentable for analogous reasons to those set forth above with respect to claims 1-17, 26 and 28-34.

IV. FORMAL MATTERS AND CONCLUSION

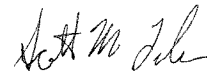
In view of the foregoing, Applicant submits that claims 1-17, 26 and 28-37, all the claims presently pending in the application, are patentably distinct over the prior art of record and are in condition for allowance. The Examiner is respectfully requested to pass the above application to issue at the earliest possible time.

Should the Examiner find the application to be other than in condition for allowance, the Examiner is requested to contact the undersigned at the local telephone number listed below to discuss any other changes deemed necessary in a telephonic or personal interview.

The Commissioner is hereby authorized to charge any deficiency in fees or to credit any overpayment in fees to Assignee's Deposit Account No. 50-0510.

Respectfully Submitted,

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